

## REMARKS

### *The Invention*

The invention is directed to a method for detecting *L. brevis* in a sample, which comprises amplifying a *L. brevis* nucleic acid sequence using specific primer sequences, and detecting the amplified *L. brevis* nucleic acid sequence using sequence-specific nucleic acid probes.

### *The Pending Claims*

Claims 42, 50-56, and 64 currently are pending and are directed to the method of detecting *L. brevis* in a sample.

### *The Abstract and Claim Amendments*

The abstract has been amended merely to shorten its length. The claims have been amended to claim more distinctly and point out more particularly the present invention. The amendments to claim 1 are supported by the specification at, for example, page 7, lines 7-8, pages 7 and 8, bridging paragraph, pages 8 and 9, bridging paragraph, page 10, lines 16-20, page 16, lines 9-10, and claim 9 as originally filed. The subject matter of new claim 64 closely parallels that of claim 42, but specifies that the primer and probe can be a nucleic acid having 90% identity, instead of 70% identity, with SEQ ID NOs 1, 21, 73, or 74. Support for claim 64 can be found in the specification at, for example, page 7, lines 7-8, pages 7 and 8, bridging paragraph, pages 8 and 9, bridging paragraph, page 9, lines 7-24, page 10, lines 16-20, page 16, lines 9-10, and claim 9 as originally filed. Claims 50-56 have been amended to correct grammar and/or sentence structure. Claims 43-49 and 57-63 have been cancelled.

Accordingly, no new matter has been added by way of the amendments to the abstract and claims.

### *The Office Action*

The Office Action raises the following concerns:

(a) claims 42, 43, 46, 47, and 50-57 are rejected under 35 U.S.C. § 112, first paragraph, for an alleged lack of written description,

(b) claims 42, 50, 53, 54, 55, and 57 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Satokari et al., *Int. J. Food Microbiology*, 45, 119-127 (1998) ("the Satokari reference"),

(c) claims 42, 43, 46, 47, 50, 53, 54, 55, and 57 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent 5,484,909 (Nietupski et al.) (“the Nietupski patent”),

(d) claim 51 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Satokari reference in view of U.S. Patent 5,792,607 (Backman et al.) (“the Backman patent”),

(e) claim 52 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Satokari reference in view of U.S. Patent 5,744,311 (Frasier et al.) (“the Frasier patent”),

(f) claim 56 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Satokari reference in view of U.S. Patent 5,738,993 (Fugono et al.) (“the Fugono patent”),

(g) claims 43, 45, 46, 47, and 49 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite.

Reconsideration of these rejections is respectfully requested.

#### *The Information Disclosure Statements*

The Office Action indicates that the nucleic acid search alignments provided in the information disclosure statement (IDS) filed on March 20, 2002 have been considered, but will not appear on the cover of any patent issuing from the subject application unless the alignments are dated. Applicants submit herewith a replacement 1449 form which indicates the date on which each sequence alignment was printed or published.

The Office Action also states that the Examiner’s file copy of the subject application indicates that an IDS was filed on June 28, 2002, but neither the 1449 form nor copies of the cited references were entered into the file. Applicants note that a 1449 form listing references AQ-BQ, and copies of listed references AQ-BQ were filed with the Patent Office on June 28, 2002, as evidenced by the Examiner’s initialing of the 1449 form. If desired, Applicants can provide the Examiner with a copy of the Examiner-initialed 1449 form and additional copies of the listed references.

#### *Discussion of Rejection Under 35 U.S.C. § 112, First Paragraph*

Claims 42, 43, 46, 47, and 50-57 have been rejected under Section 112, first paragraph, for allegedly not complying with the written description requirement. This rejection is traversed for the reasons set forth below.

The Office Action contends that the specification does not adequately describe the “enormous” scope of the probe and primer nucleic acid molecules recited in the rejected claims. The Office Action further contends that only SEQ ID NOS: 1, 21, 73, and 74 are adequately described in the specification.

Claim 42, as amended, and new claim 64 are directed to methods of detecting *L. brevis* in a sample comprising the use of a nucleic acid sequence consisting of SEQ ID NO: 1, 21, 73 or 74, a fragment thereof having at least 10 nucleotides, or homologs or complements thereof. SEQ ID NO: 1 is derived from the intergenic spacer 23S-5S of *L. brevis* (see specification at, for example, Table 1 and page 8, second paragraph). SEQ ID NOs: 21, 73 and 74 are subsequences of SEQ ID NO: 1, as illustrated in the table below.

SEQ ID NO: 1		Probes
tatatggaag taagaccct gagagatgat		
caggtagata ggctggaagt agcagcgccg	60	
tgaggcgtgg agcggaccag tactaatcgg		
tcgaggactt <b>aaccaagtca acaacgtagt</b>	120	<b>SEQ ID Nr: 21</b>
<b>tgttcgaga ataattgaat aatatctagt</b>		<b>SEQ ID Nr. 73</b>
<b>tttgaggga gaagttctct tatagtgtgg</b>	180	<b>SEQ ID Nr. 74</b>
tggcgatagc ctgaaggata cacctgttcc		
catgccgaac acagaagta agcttcagca	240	
cgccgatagt agttggggga tcgcccc	267	

Thus, as acknowledged by the Office Action, the present specification discloses SEQ ID NOS: 1, 21, 73, and 74, as well as methods for using these sequences to detect a *L. brevis* nucleic acid molecule in a sample. From the disclosure of SEQ ID NOS: 1, 21, 73, and 74, one of ordinary skill in the art would have recognized that the present application also contemplates fragments of SEQ ID NOS 1, 21, 73, and 74 comprising at least 10 nucleotides, as well as homologs and complements of SEQ ID NOS 1, 21, 73, and 74.

Accordingly, the subject matter of the pending claims, as amended, is described in the specification in such a way as to convey to one of ordinary skill in the art that Applicants had possession of the claimed invention at the time the subject application was filed. As such, the Section 112, first paragraph, rejection should be withdrawn.

#### *Discussion of Rejections Under 35 U.S.C. § 102(b)*

Claims 42, 50, 53, 54, 55, and 57 have been rejected under Section 102(b) as allegedly anticipated by the Satokari reference. The Satokari reference discloses methods of detecting the beer-spoiling bacteria *Megasphaera* and *Pectiunatus*. The Satokari reference,

however, does not disclose or suggest methods for detecting *L. brevis* using SEQ ID NOs: 1, 21, 73, and 74 as amplification primers or detection probes, or fragments, homologs, or complements thereof, as required by the pending claims. Indeed, the Office Action states that nucleic acids comprising SEQ ID NO: 1, 21, 73, or 74, in their entirety, are free of prior art.

Claims 42, 43, 46, 47, 50, 53, 54, 55, and 57 have been rejected under Section 102(b) as allegedly being anticipated by the Nietupski patent. The Nietupski patent allegedly discloses methods for detecting beer-spoiling bacteria *Lactobacillus* and *Pediococcus* comprising the use of nucleic acid probes that are at least 70% identical to a fragment of SEQ ID NO: 1 that is 10 nucleotides long (i.e., SEQ ID NO: 9 and 10). A comparison of SEQ ID NOs: 9 and 10 of the Nietupski patent with SEQ ID NO: 1 of the present application using the BLAST database (<http://www.ncbi.nlm.nih.gov/blast/bl2seq/wblast2.cgi>) revealed no sequence similarity between these sequences. Accordingly, the Nietupski patent does not disclose nucleic acid molecules having at least 70% identity to any size fragment of SEQ ID NO:1.

In view of the above, neither the Satokari reference nor the Nietupski patent discloses or suggests the subject matter of claims 42 and 64, or claims depending therefrom. Accordingly, the Section 102 rejections should be withdrawn.

#### *Discussion of Rejections Under 35 U.S.C. § 103*

Claims 51, 52, and 56 have been rejected under Section 103(a) as allegedly being obvious over the Satokari reference in view of the Backman patent, the Fraiser patent, and the Fugono patent, respectively. These rejections are traversed for the reasons set forth below.

To establish a *prima facie* case of obviousness under Section 103 based on a combination of references, (i) the references must disclose or suggest every element of the claimed invention, (ii) there must be a motivation to combine the references, and (iii) the combination of references must provide a reasonable expectation of success for making the claimed invention. M.P.E.P. § 2143.

As discussed above, the Satokari reference discloses methods of detecting the beer-spoiling bacteria *Megasphaera* and *Pectiunatus*. The Satokari reference, however, does not disclose or suggest methods for detecting *L. brevis* using any of SEQ ID NOs: 1, 21, 73, and 74 as amplification primers or detection probes, or fragments or homologs thereof, as required by the pending claims. In addition, the Office Action acknowledges that SEQ ID NOs: 1, 21, 73, and 74 are free of prior art.

The Backman patent, the Fraiser patent, and the Fugono patent are relied upon solely for their teachings of ligase chain reaction amplification methods, isothermal strand

displacement amplification methods, and methods for modifying nucleotides, respectively. Neither the Backman patent, the Fraiser patent, nor the Fugono patent discloses or suggests the subject matter of the pending claims. Accordingly, the deficiencies in the disclosure of the Satokari reference are not cured by the disclosure of the Backman patent, the Frasier patent, or the Fugono patent.

Since the cited references do not disclose or suggest all of the elements of the pending claims, the invention defined by claims 46 and 64, and claims dependent thereon, is unobvious in view of the cited references. Accordingly, the Section 103 rejections should be withdrawn.

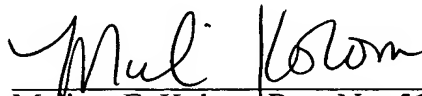
*Discussion of Rejection Under 35 U.S.C. § 112, Second Paragraph*

Claims 43, 45, 46, 47, and 49 are allegedly indefinite for reciting nucleic acids "with a sequence according to one of SEQ ID NO...." The Office Action contends that it is not clear whether this phrase denotes open or closed claim language. Applicants note that the claims subject to the indefiniteness rejection have been cancelled, and claim 42 has been amended to replace the rejected phrase with "a nucleic acid sequence consisting of ...". The pending claims are clear and one of ordinary skill in the art would understand the metes and bounds of the pending claims. As such, the Section 112, second paragraph, rejection should be withdrawn.

*Conclusion*

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned agent.

Respectfully submitted,



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